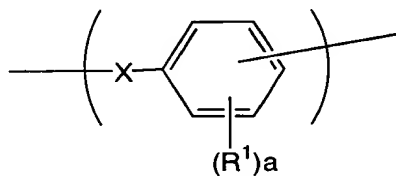


What is claimed is:

1. A polymer electrolyte containing a block copolymer comprising one or more blocks having sulfonic acid groups and one or more blocks having substantially no sulfonic acid group, and at least one block among all the blocks is a block having aromatic rings in the main chain thereof.

2. The polymer electrolyte according to Claim 1, wherein the blocks having sulfonic acid groups have a structure where the sulfonic acid groups are directly bonded to the aromatic rings.

3. The polymer electrolyte according to Claim 1 or 2, wherein the blocks having sulfonic acid groups are blocks composed of the repeating units represented by the general formula [1] into which sulfonic acid groups have been introduced:

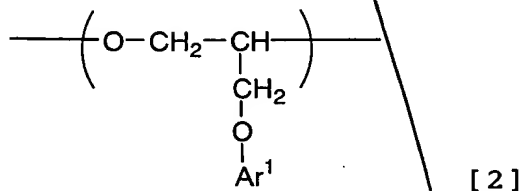


in the formula, X represents -O-, -S-, -NH- or direct bond,  $R^1$  represents an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms or a phenyl group, and a is an integer from 0 to 3, and when a plurality of  $R^1$ s are present, these may be the same or different.

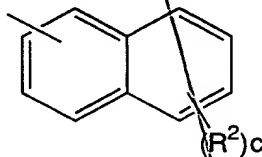
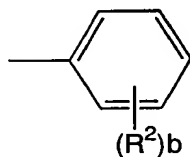
4. The polymer electrolyte according to Claim 3, wherein

X is -O- in the general formula [1].

5. The polymer electrolyte according to Claim 1 or 2, wherein the blocks having sulfonic acid groups are blocks composed of the repeating units represented by the general formula [2] into which sulfonic acid groups have been introduced:



in the formula,  $\text{Ar}^1$  represents a group selected from the following structures,

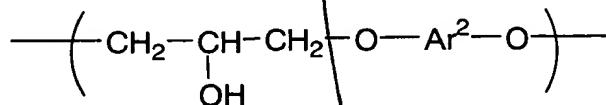


in the formulae,  $\text{R}^2$  represents an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a phenyl group or a phenoxy group, b is an integer from 0 to 4, and c is an integer from 0 to 6, and when a plurality of  $\text{R}^2$ s are present, these may be the same or different.

6. The polymer electrolyte according to Claim 1 or 2, wherein the blocks having sulfonic acid groups are blocks composed of an epoxy resin into which sulfonic acid groups have been introduced.

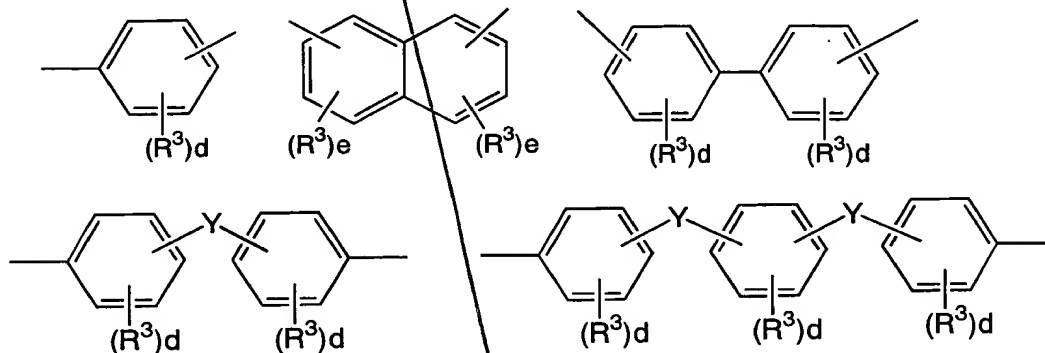
7. The polymer electrolyte according to Claim 6, wherein

the blocks having sulfonic acid groups are blocks having a repeating unit represented by the general formula [3] into which sulfonic acid groups have been introduced:



[3]

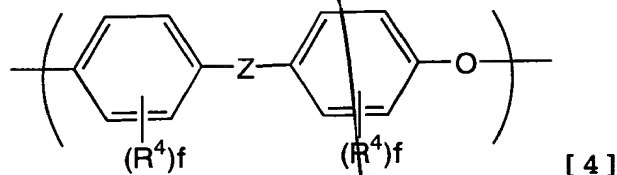
in the formula [3],  $\text{Ar}^2$  represents a group selected from the following structures,



in the formulae,  $\text{R}^3$  represents an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms or a phenyl group,  $d$  is an integer from 0 to 3, and  $e$  is an integer from 0 to 2; when a plurality of  $\text{R}^3$ s are present, these may be the same or different;  $\text{Y}$  represents  $-\text{O}-$ ,  $-\text{S}-$ , an alkylene group having 1 to 20 carbon atoms, a halogenated alkylene group having 1 to 10 carbon atoms or an alkylenedioxy group having 1 to 20 carbon atoms; and when a plurality of  $\text{Y}$ s are present, these may be the same or different.

8. The polymer electrolyte according to Claim 1 or 2, wherein the blocks having substantially no sulfonic acid group are aromatic polyethers having a repeating unit

represented by the general formula [4]:



in the formula,  $\text{R}^4$  represents an alkyl group having 1 to 6 carbon atoms;  $f$  is an integer from 0 to 4; when a plurality of  $\text{R}^4$ s are present, these may be the same or different; and  $\text{Z}$  represents  $-\text{CO}-$  or  $-\text{SO}_2-$ .

9. The polymer electrolyte according to Claim 8, wherein  $\text{Z}$  is  $-\text{SO}_2-$  in the general formula [4].

10. The polymer electrolyte according to Claim 1 or 2, wherein the amount of the block having substantially no sulfonic acid group is from 60 to 95% by weight based on the weight of the whole block copolymer.

11. A method for producing a polymer electrolyte of ~~Claims 1 to 10~~ <sup>CLAIMS 1 OR 2</sup>, comprising the steps of: reacting a precursor of a block having repeating units represented by the general formula [1], [2] or [3], with a precursor of a block having a repeating unit represented by the general formula [4] to produce a block copolymer; and then sulfonating said copolymer.

12. The method for producing a polymer electrolyte according to Claim 11, wherein it comprises a step of sulfonating the block copolymer with sulfuric acid having a concentration of 90% or more.

A B/H  
13. A fuel cell obtainable by using a polymer electrolyte  
CLAIM 1 OR 2  
of ~~any one of Claims 1 to 10.~~